

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1. (withdrawn) An intraocular lens for implanting within a natural capsular bag of a human eye, said lens implant comprising:

a lens body having anterior and posterior sides and including an optic and two or more plate haptics spaced about said optic, said haptics having inner ends adjacent to said optic and outer ends extending from said optic, said haptics having lateral edges; and

at least one of said haptics having one or more notches spaced about said lateral edges of said haptics and at least one of said haptics having a thinner portion adjacent the optic.

2. (withdrawn) A lens according to claim 1, wherein said notches have an edge portion.

Claims 3-4 (cancelled)

5. (withdrawn) A lens according to claim 2, wherein:
said edge portion being disposed substantially transversally to a longitudinal axis of said haptic.

6. (withdrawn) A lens according to claim 2, wherein:
said edge portion being disposed substantially transversally to a side edge of said haptic.

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

7. (withdrawn) A lens according to claim 1, further comprising:
a plurality of protuberances extending outwardly from at least one of the anterior and/or posterior sides of one or more of said haptics to fixate said haptic in a natural capsular bag of an eye.

8. (withdrawn) A lens according to claim 1, wherein:
at least one of said haptics has a plurality of openings formed therethrough to allow fibrosis of an anterior capsule remnant to a posterior capsule remnant through said haptic outer end opening following implantation of said lens into a natural capsular bag of an eye.

9. (currently amended) ~~An intraocular~~ A flexible accommodating intraocular lens for implanting within a natural capsular bag of a human eye, said lens implant comprising:

a single optic having anterior and posterior sides and one or more plate haptics extending from the edge of said optic,

said haptics having inner ends adjacent to said optic and outer ends extending from said optic designed to directly engage the capsular bag, at least one haptic having a thinner portion adjacent the optic extending transversely across the plate haptics,

said haptics being adapted to move said optic anteriorly and posteriorly relative to the outer ends of said haptics upon constriction and relaxation of the ciliary muscle of the eye, and

said haptics having at least one fixation protuberance extending from at least one surface of said haptic designed to directly engage the inside of the capsular bag.

10. (currently amended) The lens according to claim 9, wherein ~~said~~ at least one protuberance extends anteriorly from said haptics.

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

11. (currently amended) The lens according to claim 9, wherein ~~said~~ at least one protuberance extends posteriorly from said haptics.

12. (currently amended) The lens according to claim 9, wherein ~~said~~ at least one protuberance extends both anteriorly and posteriorly from said haptics.

13. (currently amended) The lens according to claim 9, wherein ~~said~~ at least one protuberance extends laterally from said haptics.

14. (currently amended) The lens according to claim 9, wherein at ~~said~~ least one protuberance extends anteriorly or posteriorly, or both anteriorly and posteriorly from said haptics, and may have at least one other protuberance that extends laterally from said haptics.

15. (cancelled)

16. (withdrawn) The lens according to claim 9, wherein said haptics have lateral edges, and
at least one of said haptics have one or more notches spaced about said lateral edges of said haptics.

17. (previously presented) The lens according to claim 9, wherein said lateral edges of said haptics are parallel to each other, or tapered outwardly from the optic, or tapered inwardly from the optic.

18. (withdrawn) The lens according to claim 9, wherein said haptics have one or more openings formed therethrough.

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

19. (withdrawn) The lens according to claim 9, wherein the protuberances are prong portions with globular knob end portions.

20. (withdrawn) The lens according to claim 9, wherein the protuberances are prong protuberances.

21. (previously presented) The lens according to claim 9, wherein the protuberances extend outwardly from the anterior and/or posterior sides.

22. (previously presented) The lens according to claim 9, wherein the protuberances extend outwardly from the peripheral border of said haptic.

23. (withdrawn) An intraocular lens for implanting within a natural capsular bag of a human eye, said lens implant comprising:

a lens body having anterior and posterior sides and including an optic and two or more plate haptics spaced about said optic, said haptics having inner ends adjacent to said optic and outer ends extending from said optic, said haptics having lateral edges; and

at least one of said haptics having one or more notches with an edge portion and the notches being spaced about said lateral edges of said haptics, said edge portion being disposed at a substantial angle to a longitudinal axis of said haptic.

24. (withdrawn) An intraocular lens for implanting within a natural capsular bag of a human eye, said lens implant comprising:

a lens body having anterior and posterior sides and including an optic and two or more plate haptics spaced about said optic, said haptics having inner ends adjacent to said optic and outer ends extending from said optic, said haptics having lateral edges; and

at least one of said haptics having one or more notches with an edge portion and

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

the notches being spaced about said lateral edges of said haptics, said edge portion being disposed at a substantial angle to a side edge of said haptic.

25. (currently amended) A flexible accommodating intraocular ~~An intraocular~~ lens for implanting within a natural capsular bag of a human eye, said lens implant comprising:

a single optic having anterior and posterior sides and one or more haptics extending from the edge of said optic,

said haptics having inner ends adjacent to said optic and outer ends extending from said optic designed to directly engage the capsular bag, the inner ends having a thinner portion adjacent to the optic extending transversely across the plate haptics,

said haptics being adapted to move said optic anteriorly and posteriorly relative to the outer ends of said haptics upon construction and relaxation of the ciliary muscle of the eye, and

said haptics having fixation protuberances extending both anteriorly and posteriorly from said haptic designed to directly engage the inside of the capsular bag.

26. (previously presented) The lens according to Claim 25, wherein said haptics comprise at least a pair of haptics both having protuberances extending both anteriorly and posteriorly therefrom.

27. (previously presented) The lens according to Claim 26, wherein said haptics are plate haptics and each have a thinner portion adjacent the optic.

28. (withdrawn) The lens according to Claim 9 wherein at least one of said haptics has one or more notches with an edge portion and the notches being spaced about said lateral edges of said haptics, said edge portions being disposed at a substantial angle to a longitudinal axis of said haptic.

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

29. (withdrawn) The lens according to Claim 25 wherein at least one of said haptics has one or more notches with an edge portion and the notches being spaced about said lateral edges of said haptics, said edge portions being disposed at a substantial angle to a longitudinal axis of said haptic.

30. (currently amended) A flexible accommodating intraocular lens including a flexible optic to be placed within the capsular bag of the eye,

the lens comprising an optic with anterior and posterior sides and two or more extending portions from the optic designed to directly engage the capsular bag, the inner ends having a thinner portion adjacent to the optic extending transversely across the plate haptics,

the extending portions having at their distal ends fixation devices such that the intraocular lens has four or more fixation points for centration and fixation directly in the periphery of the capsular bag, and

the lens being adapted to move anteriorly upon ciliary muscle construction.

31. (previously presented) An accommodating intraocular lens according to Claim 30 wherein the extending portions comprise haptics.

32. (previously presented) An accommodating intraocular lens according to Claim 30 wherein the fixation points comprise protuberances.

33. (previously presented) An accommodating intraocular lens according to Claim 32 wherein the protuberances extend anteriorly and posteriorly.

34. (currently amended) ~~An~~ A flexible accommodating intraocular lens for implanting within a natural capsular bag of a human eye, said lens implant comprising:
a single optic having anterior and posterior sides and one or more plate haptics extending from the edge of said optic,

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

said haptics having inner ends adjacent to said optic and outer ends extending from said optic designed to engage the capsular bag, at least one haptic having a thinner portion adjacent the optic extending transversely across the plate haptics,

said haptics being adapted to move said optic anteriorly and posteriorly relative to the outer ends of said haptics upon constriction and relaxation of the ciliary muscle of the eye, and

said haptics having at least one fixation element extending from at least one surface of said haptic designed to engage the inside of the capsular bag.

35. (currently amended) The lens according to claim 34, wherein ~~said~~ at least one fixation element extends anteriorly from said haptics.

36. (currently amended) The lens according to claim 34, wherein ~~said~~ at least one fixation element extends posteriorly from said haptics.

37. (currently amended) The lens according to claim 34, wherein ~~said~~ at least one fixation element extends both anteriorly and posteriorly from said haptics.

38. (currently amended) The lens according to claim 34, wherein ~~said~~ at least one fixation element extends laterally from said haptics.

39. (currently amended) The lens according to claim 34, wherein at ~~said~~ least one fixation element extends anteriorly or posteriorly, or both anteriorly and posteriorly from said haptics, and may have at least one other fixation element that extends laterally from said haptics.

40. (previously presented) The lens according to claim 34, wherein said lateral edges of said haptics are parallel to each other, or tapered outwardly from the optic, or tapered inwardly from the optic.

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

41. (previously presented) The lens according to claim 34, wherein the fixation elements extend outwardly from the anterior and/or posterior sides.

42. (previously presented) The lens according to claim 4, wherein the fixation elements extend outwardly from the peripheral border of said haptic.

43. (currently amended) ~~An~~ A flexible accommodating intraocular lens for implanting within a natural capsular bag of a human eye, said lens implant comprising:
a single optic having anterior and posterior sides and one or more haptics extending from the edge of said optic,

said haptics having inner ends adjacent to said optic and outer ends extending from said optic designed to engage the capsular bag, the inner ends having a thinner portion adjacent to the optic extending transversely across the plate haptics,

said haptics being adapted to move said optic anteriorly and posteriorly relative to the outer ends of said haptics upon construction and relaxation of the ciliary muscle of the eye, and

said haptics having fixation elements extending both anteriorly and posteriorly from said haptic designed to engage the inside of the capsular bag.

44. (previously presented) The lens according to Claim 43, wherein said haptics comprise at least a pair of haptics both having a fixation element extending both anteriorly and posteriorly therefrom.

45. (previously presented) The lens according to Claim 44, wherein said haptics are plate haptics and each has a thinner portion adjacent the optic.

46. (currently amended) A flexible accommodating intraocular lens including a flexible optic to be placed within the capsular bag of the eye,
the lens comprising an optic with anterior and posterior sides and two or more

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

extending portions from the optic designed to engage the capsular bag, the inner ends having a thinner portion adjacent to the optic extending transversely across the extending portions,

the extending portions having at their distal ends fixation elements such that the intraocular lens has four or more fixation elements for centration and fixation directly in the periphery of the capsular bag, and

the lens being adapted to move anteriorly upon ciliary muscle construction.

47. (previously presented) An accommodating intraocular lens according to Claim 46 wherein the extending portions comprise haptics.

48. (previously presented) An accommodating intraocular lens according to Claim 46 wherein the fixation elements comprise protuberances.

49. (previously presented) An accommodating intraocular lens according to Claim 48 wherein the fixation elements extend anteriorly and posteriorly.

50. (currently amended) ~~An~~ A flexible accommodating intraocular lens for implanting within a natural capsular bag of a human eye, said lens implant comprising:
a single biconvex solid optic having anterior and posterior sides and two or more plate haptics extending from the edge of said optic,

said haptics having inner ends adjacent to said optic and outer ends extending from said optic designed to engage the capsular bag, the haptics having a thinner portion adjacent the optic extending transversely across the plate haptics,

said haptics being adapted to move said optic anteriorly and posteriorly relative to the outer ends of said haptics upon constriction and relaxation of the ciliary muscle of the eye, and

said haptics having at least one fixation element extending from at least one surface of each haptic designed to engage the inside of the capsular bag.

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

51. (currently amended) The lens according to claim 50, wherein ~~said~~ at least one fixation element extends anteriorly from said haptics.

52. (currently amended) The lens according to claim 50, wherein ~~said~~ at least one fixation element extends posteriorly from said haptics.

53. (currently amended) The lens according to claim 50, wherein ~~said~~ at least one fixation element extends both anteriorly and posteriorly from said haptics.

54. (currently amended) The lens according to claim 50, wherein ~~said~~ at least one fixation element extends laterally from said haptics.

55. (currently amended) The lens according to claim 50, wherein ~~at said~~ least one fixation element extends anteriorly or posteriorly, or both anteriorly and posteriorly from said haptics, and may have at least one other fixation element that extends laterally from said haptics.

56. (previously presented) The lens according to claim 55, wherein said haptics have lateral edges, and
at least one of said haptics has one or more notches spaced about said lateral edges of said haptics.

57. (previously presented) The lens according to claim 55, wherein said lateral edges of the haptics are parallel to each other, or tapered outwardly from the optic, or tapered inwardly from the optic.

58. (previously presented) The lens according to claim 55, wherein said haptics have one or more openings formed therethrough.

Applicant : J. Stuart Cumming
Appl. No. : 09/943,910
Examiner : Christopher D. Prone
Docket No. : 13533.4030

59. (previously presented) The lens according to claim 55, wherein the fixation elements have knob end portions.

60. (currently amended) ~~An~~ A flexible accommodating intraocular lens for implanting within a natural capsular bag of a human eye, said lens implant comprising:
a single biconvex solid optic having anterior and posterior sides and two or more haptics extending from the edge of said optic,
said haptics having inner ends adjacent to said optic and outer ends extending from said optic designed to engage the capsular bag, the inner ends having a thinner portion adjacent to the optic extending transversely across the plate haptics,
said haptics being adapted to move said optic anteriorly and posteriorly relative to the outer ends of said haptics upon construction and relaxation of the ciliary muscle of the eye, and
each of said haptics having fixation elements extending anteriorly and or posteriorly from said haptics and designed to engage the inside of the capsular bag.